KEEPING FOOD SAFE TO EAT

A GUIDE FOR HOMEMAKERS

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KEEPING FOOD SAFE TO EAT

A Guide for Homemakers

Poor food-handling practices in the home often cause illness in the family, even though the foods were safe to eat when purchased or first prepared.

Lack of sanitation, insufficient cooking, and improper storage can allow bacteria in food to increase to dangerous levels. Some bacteria produce poisonous substances called toxins that cause illness when the food is eaten.

Outbreaks of illness from food contaminated by harmful bacteria are especially common during hot summer months when perishable foods are carried on picnics and cookouts without proper refrigeration.

This bulletin contains information on how to protect your family from illness caused by harmful bacteria in food.

BACTERIA INVOLVED

Certain bacteria growing in food may cause illness in one of the following ways. Disease-producing bacteria may enter the body in contaminated food and set up infections in the digestive tract, and, in some cases, in the bloodstream. Other bacteria may form dangerous toxins in food. Eating food in which the bacteria have grown and produced toxin causes illness.

Foods containing Salmonellae can cause infection in man, called salmonellosis. The disease is difficult to control because it spreads simply and easily. *Salmonella* infections result from eating food in which large numbers of Salmonellae are growing or from personal contact with an infected person or a carrier of the infection.

Bacteria that can produce poisonous toxins in food are *Staphylococcus aureus* and *Clostridium botulinum.*

The first toxin, when eaten in food, results in so-called "staph" poisoning, probably the most common foodborne disease in the United States. The second toxin can cause botulism, the rarest and deadliest kind of food poisoning.

Another class of bacteria involved in foodborne illness is *Clostridium perfringens.* These bacteria often cause diarrheal upsets, which are rarely fatal.

Specific information on the causes, symptoms, and prevention of bacterial foodborne illnesses is found in the table on pages 8 and 9.

WHAT YOU CAN DO

You can help protect your family from foodborne illness by—

- Stressing personal hygiene for all members of your household.

- Making sure all dishes, utensils, kitchen equipment, and work surfaces are clean (see p. 3).
- Taking simple precautions in storing, preparing, cooking, and preserving all foods.

PERSONAL HYGIENE

Strict cleanliness of person and surroundings is the best way to prevent the contamination of foods and the spread of foodborne illness in the home.

Any member of the household who has an infectious disease should be discouraged from handling, preparing, or serving food. Do not permit anyone with an infected cut or other skin infections to work with food because the bacteria causing the infection may also be the source of foodborne illness.

Anyone handling food should—

- Always work with clean hands, clean hair, clean fingernails, and wear clean clothing.
- Wash hands with soap and water after using the toilet or assisting anyone using the toilet.
- Wash hands with soap and water after smoking or blowing the nose.
- Wash hands with soap and water after touching raw meat, poultry, or eggs, before working with other food.
- Avoid using hands to mix foods when clean utensils can be used.
- Keep hands away from mouth, nose, and hair.
- Cover coughs and sneezes with disposable tissues.
- Avoid using the same spoon more than once for tasting food while preparing, cooking, or serving. Eating baby food directly from a jar or can may contaminate any remaining food.

STORING FOODS

Temperature and time influence the growth of bacteria and the production of toxins in foods. Like other livings things, bacteria need food, warmth, moisture, and time to grow and multiply.

Keeping foods cold inhibits bacterial growth and the production of toxins. In most cases, prompt cooling and proper refrigeration of foods can hold the number of bacteria in foods to a safe level and no ill effects follow.

The hazard lies in holding foods for any length of time at temperatures above refrigerator temperatures and below serving temperature of hot food. For more information, see the food temperature guide on page 5.

Certain foods need special care. For recommendations on how to store these foods see the sections that follow.

Eggs and Egg-Rich Foods

Keep eggs clean and cold. Put eggs in the refrigerator promptly after getting them. Refrigerate leftover egg yolks or whites in a covered container; use within a day or two.

Always hold uncooked and cooked foods containing eggs in the refrigerator.

Refrigerate cream, custard, or meringue pies and foods with custard fillings, including cakes, cream puffs, or eclairs. Do not allow them to stand at room tem-

peratures after they cool slightly. If you carry foods of this type on summer outings, keep them in a cooler with ice or reusable cold packs until served. Follow the same precaution for salads and sandwiches made with salad dressings containing eggs or milk products and little vinegar or other acids.

Meat, Poultry, and Fish

Store unfrozen raw meat, poultry, and fish in the refrigerator. Keep commercially frozen stuffed poultry in the freezer until time to start cooking.

Do not stuff uncooked meat, poultry, or fish and hold it in the refrigerator. If stuffing is made in advance, store it separately in the refrigerator. Remove all stuffing from leftover cooked meat, poultry, or fish before cooling and storing in refrigerator; refrigerate stuffing in a separate container. Refrigerate broth or gravy immediately after the meal.

If necessary to hold cooked meat, poultry, or fish, keep the temperature of the food above 140° F. or below 40° to prevent growth of bacteria or production of toxins. Promptly refrigerate cooked meat and fish to be eaten cold or after reheating. Store cold cuts in a refrigerator or cooler, never hold at room temperatures for more than 2 or 3 hours.

Freeze cooked meat, poultry, stuffing, and gravy if you want to keep them longer than a few days.

Store frozen cooked meat or poultry products in a freezer until they are reheated for serving or thawed for immediate use.

PREPARING AND COOKING FOODS

General Pointers

- Serve food soon after cooking—or refrigerate promptly. Hot foods may be refrigerated if they do not raise the temperature of the refrigerator above 45°F. Keep them in the refrigerator until served or reheated.
- Speed the cooling of large quantities of food by refrigerating in shallow containers.
- **Keep hot foods HOT (above 140° F.) and cold foods COLD (below 40° F.) Food may not be safe to eat if held for more than 2 or 3 hours at temperatures between 60° and 125° F., the zone where bacteria grow rapidly.** Remember to count all time during preparation, storage, and serving. See food temperature guide on page 5.
- Holding of foods for several hours in an automatic oven prior to cooking is not safe if the food is in the temperature zone of 60° to 125° F. for more than 2 or 3 hours.
- Thoroughly clean all dishes, utensils, and work surfaces with soap and water after each use. It is especially important to thoroughly clean equipment and work surfaces that have been used for raw food before you use them for cooked food. This prevents the cooked food from becoming contaminated with bacteria that may have been present in the raw food. Bacteria can be destroyed by rinsing utensils and work

surfaces with chlorine laundry bleach in the proportion recommended on the package. Cutting boards, meat grinders, blenders, and can openers particularly need this protection.

- Always wipe up spills with paper towels or other disposable material.

Eggs and Egg-Rich Foods

Use only fresh, clean, unbroken, and odor-free eggs in any recipe in which eggs are not thoroughly cooked, such as egg-milk drinks, soft-cooked eggs, poached eggs, scrambled eggs, omelets, uncooked salad dressings, ice cream, meringues, soft custards, or puddings cooked on the top of the range.

Cracked or soiled eggs may contain harmful bacteria. They should be used only in foods that are to be thoroughly cooked, such as baked goods or casseroles.

Cool hot foods containing a high proportion of eggs if they are not to be served hot. Set custards and puddings in ice water and stir large batches of pudding to speed cooling. Then refrigerate promptly until time to serve.

Meat, Poultry, and Fish

Thaw frozen raw meat or unstuffed raw poultry in the refrigerator, or for a quicker method, immerse the package in its watertight wrapper in cold water. Thaw until meat is pliable.

You can cook frozen meat, poultry, or fish without thawing, but you must allow more cooking time to be sure the center of the meat is properly cooked. Allow at least one and a half times as long to cook as required for unfrozen or thawed products of the same weight and shape. Undercooked foods may not be safe to eat.

Stuff fresh or thawed meat, poultry, or fish just before roasting. Put the stuffing in lightly—without packing—to allow heat to penetrate more quickly throughout the stuffing.

Cook meat, poultry, or fish as recommended in a reliable timetable. See Home and Garden Bulletin 1, "Family Fare: A Guide to Good Nutrition."[1]

Make sure that the stuffing reaches a temperature of at least 165° F. during roasting. To check the temperature of the stuffing after roasting, insert a meat thermometer in the stuffing for about 5 minutes. Cook longer if necessary. Any stuffing cooked separately in the oven should also reach 165° F.

Do not partially cook meat or poultry one day and complete the cooking the next day. Keep cooked meat, fish, or poultry hot (above 140° F.) until it is served.

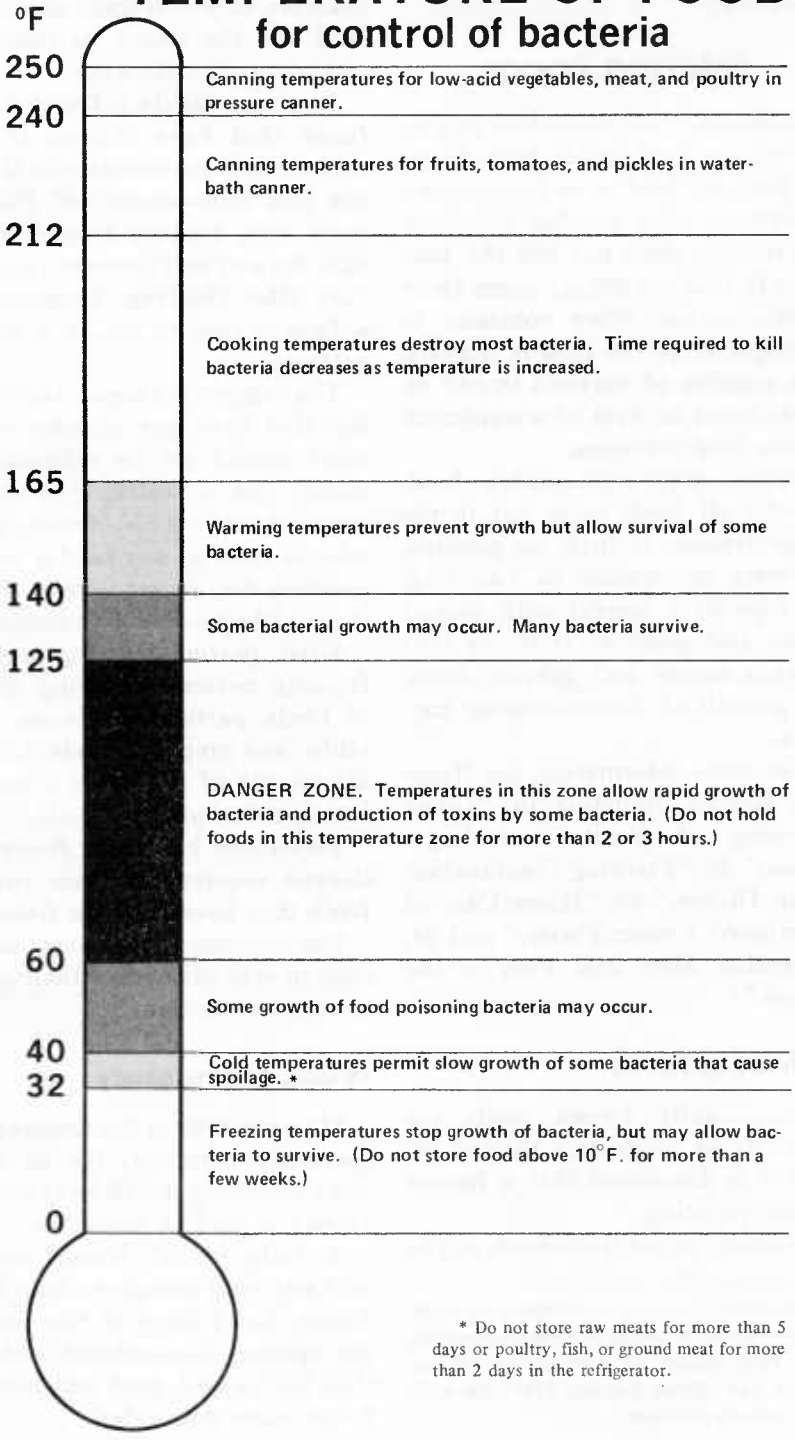
Heat leftovers thoroughly. Boil broth and gravies several minutes when reheating them.

Heat frozen cooked meat, poultry, or fish without thawing or thaw in the refrigerator before using.

Directions on the package of all prepared and partially prepared frozen foods must be followed exactly. Heating for the specified

[1] Single copies may be obtained by sending a request to Office of Communication, U.S. Department of Agriculture, Washington, D.C. 20250. Include ZIP Code with your return address.

TEMPERATURE OF FOOD
for control of bacteria



* Do not store raw meats for more than 5 days or poultry, fish, or ground meat for more than 2 days in the refrigerator.

time assures that the food will be safe to eat.

FREEZING FOODS

Maintain strict sanitation in preparing any food for the home freezer. Keep all food to be frozen—and everything that touches it—clean.

Freezing does not kill the bacteria in food; it simply stops their multiplication. They continue to multiply after the food is thawed. The number of bacteria in and on foods must be held at a minimum before food is frozen.

Freeze only high-quality food. Handle all foods to be put in the home freezer as little as possible. Bacteria are spread by handling. Be especially careful with cooked meats and poultry. Mixtures that contain sauces and gravies favor the growth of disease-causing bacteria.

For more information, see Home and Garden Bulletins 10, "Home Freezing of Fruits and Vegetables;" 40, "Freezing Combination Main Dishes;" 69, "Home Care of Purchased Frozen Foods;" and 93, "Freezing Meat and Fish in the Home." [2]

Refreezing Foods

Occasionally frozen foods are partially or completely thawed before it is discovered that a freezer is not operating.

Whether or not these foods can be refrozen safely depends on the temperature at which these foods were held and the length of time they were held after thawing.

You may safely refreeze frozen foods that have thawed if they still contain ice crystals or if they are still cold—about 40° F.—and have been held no longer than 1 or 2 days at refrigerator temperature after thawing. In general, if a food is safe to eat, it is safe to refreeze.

Thawed ground meats, poultry, or fish that have any off-odor or off-color should not be refrozen and should not be eaten. Thawed ice cream should not be refrozen. *If the odor or color of any food is poor or questionable, do not taste it. Throw it out. The food may be dangerous.*

Even partial thawing and refreezing reduce the eating quality of foods, particularly fruits, vegetables, and prepared foods. The eating quality of red meats is reduced less than that of other foods.

Foods that have been frozen and thawed require the same care as foods that have not been frozen.

Use refrozen foods as soon as possible to save as much of their eating quality as you can.

In Case of Emergency

If power fails or the freezer stops operating normally, try to determine how long it will be before the freezer is back in operation.

A fully loaded freezer usually will stay cold enough to keep foods frozen for 2 days if the door is not opened. In a cabinet with less than half a load, food may not stay frozen more than 1 day.

[2] Single copies may be obtained by sending a request to Office of Communication, U.S. Department of Agriculture, Washington, D.C. 20250. Include ZIP Code with your return address.

If normal operation cannot be resumed before the food will start to thaw, use dry ice. If dry ice is placed in the freezer soon after the power is off, 25 pounds should keep the temperature below freezing for 2 to 3 days in a 10-cubic-foot cabinet with half a load, 3 to 4 days in a fully loaded cabinet.

Handle dry ice with care. Be sure the room is well ventilated when you use it. Never touch dry ice with bare hands.

Place the dry ice on cardboard or small boards on top of packages and do not open freezer again except to put in more dry ice or to remove it when normal operation is resumed.

Or move food to a locker plant, using insulated boxes or thick layers of paper to prevent thawing.

CANNING FOODS

Commercially canned foods are considered safe because they are processed under carefully controlled conditions. *However, if a canned food shows any sign of spoilage—bulging can ends, leakage, spurting liquid, off-odor, or mold—do not use it. Do not even taste it.*

Home-canned vegetables, meat, and poultry may contain the toxin that causes botulism if they are not properly processed.

It is not safe to can vegetables, meat, or poultry in a boiling-water bath, an oven, a steamer without pressure, or an open kettle. None of these methods will heat these products enough to kill the dangerous bacterial spores of *Clostridium botulinum* within a reasonable time.

There is no danger of botulism, however, if these foods are canned properly in a pressure canner. *Be sure that the pressure canner is in perfect order and that each step of the canning process—including time and temperature directions—is followed exactly.*

Tomatoes, pickled vegetables, and fruits can be processed safely in a boiling-water bath because they are more acid than other vegetables, meat, and poultry. However, do not use overripe tomatoes for canning, since tomatoes lose acidity as they mature.

Boil all home-canned vegetables and home-canned meats as described below, after opening and **before tasting.** Heating usually makes any odor of spoilage more noticeable.

Bring home-canned vegetables to a rolling boil, then cover and boil for at least 10 minutes. Boil spinach and corn 20 minutes. If the food looks spoiled, foams, or has an off-odor, *do not taste it;* destroy it.

Boil home-canned meat or poultry 20 minutes in a covered pan before tasting. If meat develops the characteristic odor of spoiled meat, destroy it without tasting.

See Home and Garden Bulletin 8, "Home Canning of Fruits and Vegetables," and Home and Garden Bulletin 106, "Home Canning of Meat and Poultry," [3] for specific directions and scientifically tested time-temperature recommendations.

[3] Single copies may be obtained by sending a request to Office of Communication, U.S. Department of Agriculture, Washington, D.C. 20250. Include ZIP Code with your return address.

Name of illness	What causes it	Symptoms
Salmonellosis. Examples of foods involved: Poultry, red meats, eggs, dried foods, dairy products.	Salmonellae. Bacteria widespread in nature, live and grow in intestinal tracts of human beings and animals.	Severe headache, followed by vomiting, diarrhea, abdominal cramps, and fever. Infants, elderly, and persons with low resistance are most susceptible. Severe infections cause high fever and may even cause death.
Perfringens poisoning. Examples of foods involved: Stews, soups, or gravies made from poultry or red meat.	*Clostridium perfringens.* Spore-forming bacteria that grow in the absence of oxygen. Temperatures reached in thorough cooking of most foods are sufficient to destroy vegetative cells, but heat-resistant spores can survive.	Nausea without vomitting, diarrhea, acute inflammation of stomach and intestines.
Staphylococcal poisoning (frequently called staph). Examples of foods involved: Custards, egg salad, potato salad, chicken salad, macaroni salad, ham, salami, cheese.	*Staphylococcus aureus.* Bacteria fairly resistant to heat. Bacteria growing in food produce a toxin that is extremely resistant to heat.	Vomiting, diarrhea, prostration, abdominal cramps. Generally mild and often attributed to other causes.
Botulism. Examples of foods involved: Canned low-acid foods, smoked fish.	*Clostridium botulinum.* Spore-forming organisms that grow and produce toxin in the absence of oxygen, such as in a sealed container.	Double vision, inability to swallow, speech difficulty, progressive respiratory paralysis. Fatality rate is high, in the United States about 65 percent.

Characteristics of illness	Preventive measures
Transmitted by eating contaminated food, or by contact with infected persons or carriers of the infection. Also transmitted by insects, rodents, and pets. Onset: Usually within 12 to 36 hours. Duration: 2 to 7 days.	Salmonellae in food are destroyed by heating the food to 140° F. and holding for 10 minutes or to higher temperatures for less time; for instance, 155° F. for a few seconds. Refrigeration at 40° F. inhibits the increase of Salmonellae, but they remain alive in foods in the refrigerator or freezer, and even in dried foods.
Transmitted by eating food contaminated with abnormally large numbers of the bacteria. Onset: Usually within 8 to 20 hours. Duration: May persist for 24 hours.	To prevent growth of surviving bacteria in cooked meats, gravies, and meat casseroles that are to be eaten later, cool foods rapidly and refrigerate promptly at 40° F. or below, or hold them above 140° F.
Transmitted by food handlers who carry the bacteria and by eating food containing the toxin. Onset: Usually within 3 to 8 hours. Duration: 1 to 2 days.	Growth of bacteria that produce toxin is inhibited by keeping hot foods above 140° F. and cold foods at or below 40° F. Toxin is destroyed by boiling for several hours or heating the food in a pressure cooker at 240° F. for 30 minutes.
Transmitted by eating food containing the toxin. Onset: Usually within 12 to 36 hours or longer. Duration: 3 to 6 days.	Bacterial spores in food are destroyed by high temperatures obtained only in the pressure canner.[1] More than 6 hours is needed to kill the spores at boiling temperature (212° F.). The toxin is destroyed by boiling for 10 to 20 minutes; time required depends on kind of food.

[1] For processing times in home canning, see Home and Garden Bulletin 8, "Home Canning of Fruits and Vegetables," and 106, "Home Canning of Meat and Poultry."

Keep Household Insects Under Control

Certain household insects, particularly house flies and cockroaches, can carry some of the bacteria discussed in this bulletin. It is easier to prevent these pests from infesting your home than it is to get rid of them after they get indoors.

Keep all windows and doors tightly screened. Make sure screen doors swing outward. These simple measures will keep out most flies.

Sanitation measures, including prompt disposal of garbage, will help control cockroaches. Caulk openings and cracks around wash basins, drain pipes, water pipes, and radiator pipes. Make sure that cockroaches are not entering your home in containers and cardboard cartons brought in from the outside. Get rid of any infested containers at once.

If you need an insecticide to supplement these sanitation measures, buy a product specifically labeled for control of the kind of insect you want to kill. Read the label before you buy. Read the label before each use, and follow the directions.

Observe all precautions listed on the product label. Used improperly, many household insecticides can be injurious to humans or to household pets. Be careful not to get insecticide on food, dishes, or cooking utensils.

For additional information, see Home and Garden Bulletin 96, "Controlling Household Pests." Single copies can be obtained by sending a request to Office of Communication, U.S. Department of Agriculture, Washington, D.C. 20250. Include ZIP Code with your return address.

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